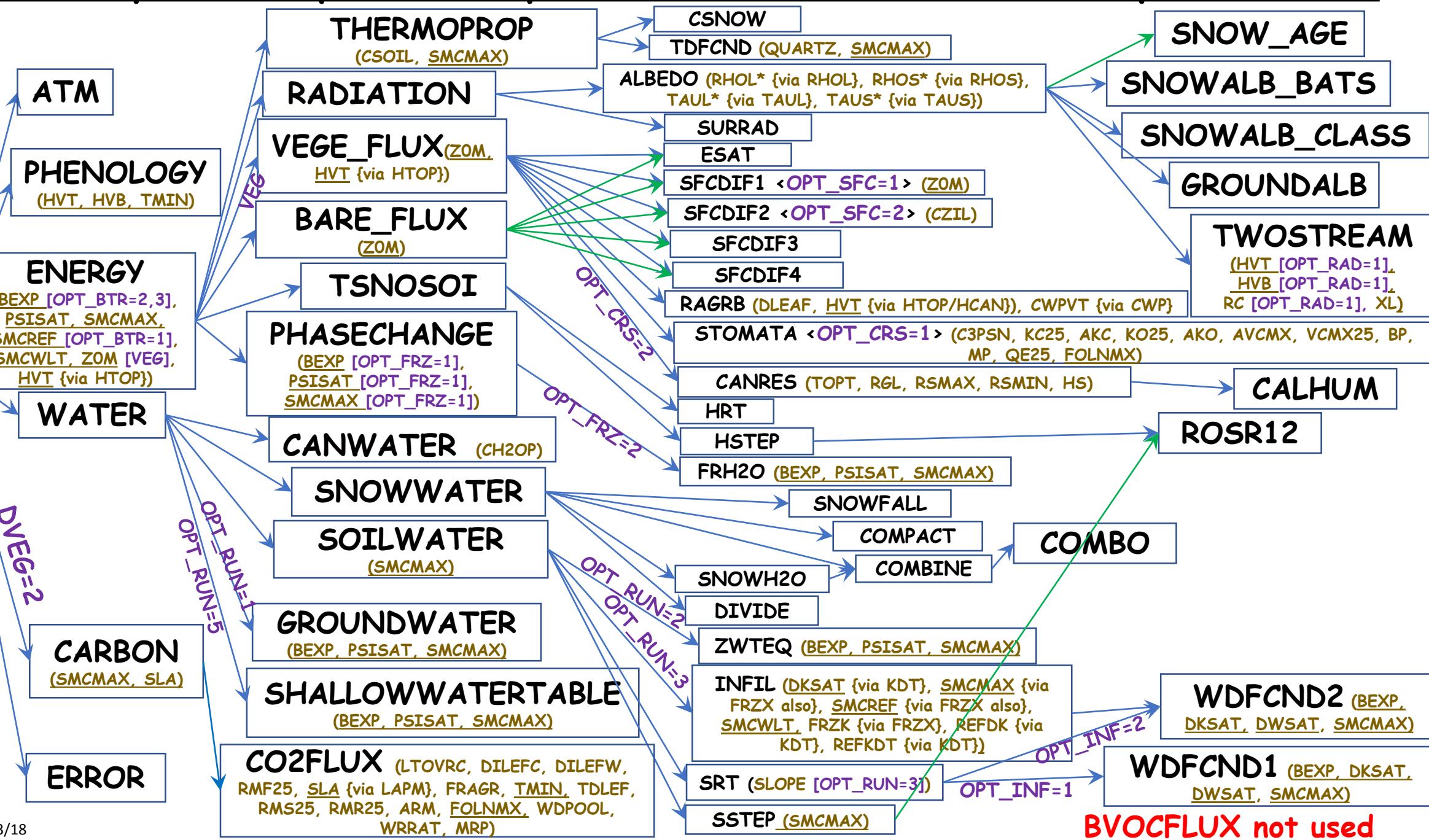


Option-dependent optimizable parameters in module_sf_noahmplsm_36.F90

NOAHMP_SFLEX_36



Explanation of previous slide

- Black-colored text (e.g., PHENOLOGY) is the routine name and is usually inside a black-colored box denoting the routine
 - Red-colored text (**BVOCFLUX**) is the routine present in this NoahMP version but actually not used by the model physics
- Blue-colored arrow (\longrightarrow) denotes one routine (at arrow tail) calling another (at arrow head). E.g., NOAHMP_SFLX_36 calls PHENOLOGY
 - I have used green arrow (\longrightarrow) instead at some places where there's too much arrow clutter, to visually discriminate the calling details
- Parameters in a routine are in brown text after the routine name and inside parentheses
 - These can either be:
 - not underlined (e.g., LTOVRC in routine CO2FLUX) indicating usage only in one routine, or
 - underlined (e.g., HVT in routine PHENOLOGY) indicating usage in multiple routines
 - A parameter name alias used in a routine is denoted enclosed in curly braces next to the parameter name (e.g., HVT {via HTOP} in routine ENERGY)

Explanation of previous slide (contd.)

- Violet-colored text denote model options
 - Options on which execution of an entire routine depend on are displayed as text with specific option values, either:
 - along a calling arrow (e.g., `DVEG=2` activates the CARBON routine), or
 - if not enough space next to the calling arrow, then right after the routine name and inside the '<>' braces (e.g., `<OPT_SFC=1>` activates the SFCDIF1 routine)
 - Options on which execution of part of a routine depend on in square brackets and right after the parameter that becomes used/active because of selecting that option value (e.g., `BEXP [OPT_FRZ=1]` inside the PHASECHANGE routine)
 - Model options key (option names in figure, & corresponding config file entries) on next slide
- Note: Green-colored text '`VEG`' (on the arrow from routine ENERGY to VEGE_FLUX) is actually not a model option but an internal flag variable indicating whether the grid cell is vegetated

Model options key to config file entries

- OPT CRS: "Noah-MP.3.6 canopy stomatal resistance option:"
- DVEG: "Noah-MP.3.6 vegetation model option:"
- OPT_BTR: "Noah-MP.3.6 soil moisture factor for stomatal resistance option:"
- OPT_FRZ*: "Noah-MP.3.6 supercooled liquid water option:"
- OPT_RUN: "Noah-MP.3.6 runoff and groundwater option:"
- OPT_INF: "Noah-MP.3.6 frozen soil permeability option:"
- OPT_SFC: "Noah-MP.3.6 surface layer drag coefficient option:"
- OPT_RAD: "Noah-MP.3.6 radiation transfer option:"

* OPT_FRZ choice does not affect choice of calibratable parameters since any calibratable parameters in the dependent FRH2O routines are also used in other main routines